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Indian Medical Gazette, 1905. 40

22200060356

INDIAN MEDICAL GAZETTE Vol. 40

Original Articles.

ON A PECULIAR TYPE OF INFLUENZA-LIKE FEVER PREVAILING IN CALCUTTA.

By LEONARD ROGERS, M.D., F.R.C.P., I.M.S.

THROUGH the great kindness of the Resident Medical Officers of the European General Hospital, Calcutta, I have been able to examine blood films from every case of fever admitted during the last year to the public wards and to make short-hand notes and copies of the four-hour temperature charts of all the cases, with a view to ascertaining the real prevalence of the different kinds of fever in India and to obtain material for some day writing an account of their course and differential diagnosis. As it will be a long time before I shall be able to get leisure to analyse the vast amount of material thus accumulated, it appears to be advisable to first describe a peculiar influenzal type of fever which has been very prevalent during the last few months, and which presents certain features resembling typhoid on the one hand and malaria fevers on the other, and consequently may be very difficult to diagnose when first encountered, while it is likely to be spread beyond Calcutta before long if it has not already done so.

The appearance and spread of the disease in Calcutta.—Throughout my inquiry blood films were kindly taken by the Assistant-Surgeons on admission of the patients to hospital before any quinine was administered to them, although in many instances they had taken the drug before coming for treatment. During the months from September to January 1905 in the great majority of the intermittent and short remittent cases malarial parasites were found, while in the next three months from February to April the number of both malarial and other short fevers was very few. In the month of May several short remittents were admitted from one ship in the Hooghly river, and they at first resembled very closely in their general appearance cases of typhoid fever, but the temperature fell to normal on the seventh day in several of them, although others ran on to from ten to fourteen days, and in some of these I cultivated from the vein blood organisms which appear to belong to the para-typhoid group, although I have not been able to test them fully yet for want of some of the necessary culture materials. In June a number of heat-stroke cases were met with (which are of great interest, but must be reserved for future communication) and at the same time a few cases were met with of patients coming in with a high temperature which fell to normal in from twelve to twenty-four hours, and which I at first thought might be mild cases also due to the severe heat wave then being experienced. Two of these cases, however, came from a ship on which I was informed by the Acting Port Health Officer, Dr. W. C. Hossack, a large number of the crew had been attacked by a very short influenzal type of fever with sudden onset. At the same time a further series of short remittents with the peculiar temperature curve, to be described presently, began to be admitted from a number of vessels and ran a course of only six or seven days, while no pathogenic organisms could be cultivated from their blood. Moreover, several patients were attacked with this type of fever while in hospital, and this fact together with the frequency of pains in the body and limbs and occasional coryza, etc., lead to the conclusion that the outbreak was one of an influenzal nature. During June and the greater part of July almost every case came from either ships in the docks or river or occurred in persons whose work took them into contact with such ships, such as pilots, etc., but throughout August and the greater part of September up to the date of writing a number of cases have been admitted to both the European General and the Medical College hospitals from various parts of Calcutta, while I have also seen several private cases in consultation in which typhoid fever was suspected and a serum test desired.

Variations in the Type of the Fever.—The marked characteristic of the disease, which is well illustrated in the accompanying charts, is the peculiar temperature curve due to the fever reaching a high point at the onset, declining to a variable but often usually marked degree during the middle of its course, only to rise again in a most typical manner the day or two before the final fall occurs. Occasionally this intermediate decline of the fever curve may be so marked as to nearly reach normal for a day or two and yet rise again to 103° or 104° F., only to finally fall the next day, while every gradation from this extreme type to a curve presenting only the slight saddle-back like remission shown in chart I, and which consequently simulates very closely the continued type of true typhoid fevers, have been met with in the present series of cases. In the milder cases, in which this temporary remission is most marked, the patients commonly come in only during the final rise, and giving a history of a few days fever with intermission, beginning with rigors, and their temperature falling in a day or so under quinine treatment, it is only natural that they should frequently be taken for malarial fever, and consequently if this peculiarity is not known and parasites are not sought for, they are certain to be returned under the convenient and very elastic heading "24a—Ague," especially during the rainy malarial season. So frequent have these terminal cases been in that they comprise just half of the present series of cases, and deserve a separate description.

The Typhoid-like Group.—It will be most convenient to describe first those typical cases which have come into hospital sufficiently early to show the characteristic saddle-back remission of temperature, of which I have tabulated twenty-six cases with fairly complete notes, taking up the points as far as possible in the order in which they would be met with in the course of a case.

General Appearance on Admission.—The very great majority of the patients being sailors were well-nourished men. The face was flushed and often markedly so, and the expression dull and listless and very suggestive of early typhoid, while in the more severe cases the high and nearly continued type of fever also pointed to that disease, while in several cases abdominal pain and somewhat suspicious-looking roseolar spots were also present. In several such cases the general aspect of the disease was so suggestive that blood was taken for the Widal test by the medical officers, but in every case the reaction was negative, and the subsequent short course of the disease confirmed the correctness of the results.

History of the Onset.—On next inquiring into the history of the case it was found that the onset was almost invariably quite sudden, which was against typhoid, although in India the latter disease may also sometimes be ushered in by a rigor and the typical gradual onset of cold latitudes is not nearly so constantly seen. A history of rigors was obtained in ten out of the twenty-six typical cases, and of chilly feeling at the beginning of the illness in three more, while in five no history of rigor could be obtained, and in the remainder there was no note made on this point. Closely similar figures were obtained in the twenty-six "terminal" cases, eleven having had rigor and two chilliness, while in two no history of either could be got. In most of the cases in which there was no history of actual rigor, as well as in some cases with such a history, it was noted that the disease began suddenly with headache often of a severe nature, so that the the suddeness of the onset of the symptoms is one of the most constant and characteristic features of the disease. The rigors were usually only met with at the beginning of the disease, and but rarely recurred,—a point of importance in differentiating the disease from malarial fevers.

Headache.—This was the most constant symptom met with together with pains in other parts of the body. Headache was noted in twenty-two out of the twenty-six typical group and in twenty out of the 26 "terminal" cases, while in the remaining cases there was no note made on this point, so that it was never recorded as being absent. Further in the majority of the cases it was noted as being of a severe nature, while in every case in which the location of the pain in the head was recorded it was found to have been in the frontal region, doubtless on account of the mucous membrane of the frontal sinuses being involved by this catarrhal affection. I look on the constancy and severity of frontal headache as an important point in favour of a diagnosis of influenza as opposed to malarial fever, for the symptom was almost as frequently met with in the milder "terminal" cases as in the more severe typical typhoid-like ones, while I find on reference to my tables of malarial cases that headache is much less constantly noted in them than in the influenza ones, while its location is considerably more variable, being not infrequently temporal or occipital.

Vomiting.—On the other hand sickness was much less frequently recorded in the influenza than in the malarial series, having been only noted in the histories of four out of fifty-two of the former, while it was frequently noted to have been absent. On the other hand it very commonly occurs in both benign and malignant tertian malaria, so that the presence of this symptom is in favour of a diagnosis of malarial fever as against influenza.

Pains in the Body and Limbs.—This symptom ranks in frequency and importance with frontal headache itself in the histories of both the typhoid-like and "terminal" cases. It was most often recorded as affecting both the body, especially the back and limbs, and next most frequently in the limbs or joints alone, while in two cases it was noted to occur in the back alone, and in thirteen more in the back, other parts, and in two more in the abdomen alone, and several times it occurred at the back of the eyes in addition to other places. These pains, moreover, were commonly noted among the initial symptoms with which the disease suddenly commenced, and they were much more constantly met with and of greater severity than the aching pains which occasionally accompany the fever of malarial origin.

The Typical Character of the Tongue.—Ten years ago, when examining all the fever cases in a native regimental hospital for malarial parasites, I met with an outbreak of influenza and noticed that the latter disease could nearly invariably be distinguished immediately from malarial fever by the character of the tongue, and in the present outbreak I have been able to verify this point, which has proved of great diagnostic value in the General Hospital cases on account of its constancy. The characteristic feature of the influenzal tongue is a thick coat of fur in the centre contrasting with a very red and often angry, raw, looking edge, which is sometimes also indented with the teeth. The dorsum may also show a "strawberry" appearance produced by red papillæ appearing through the coating of fur. The conspicuous red edge is, however, the characteristic feature of the tongue, in which it differs from the thin uniform furring in malarial and the thick uniform coating of the organ of typhoid fever.

Rashes.—As the present outbreak presents some points of resemblance to dengue it is important to note carefully the appearance of the rashes seen in a few of the cases. They were

variable in their character and distribution, as well as in the period of the disease when they were seen, and in these respects differ widely from the nearly constant and typical rash of dengue fever as described in text-books. Of the 26 typical cases admitted in the earlier stages of the disease this symptom was observed in only six, and in three of these it was limited to a few spots on the abdomen noticed when looking for typhoid rash, while in two of these it was mentioned that they resembled mosquito-bites. In the other three cases a definite rash was present on the arms and legs, and in one of them also on the body, which were described as being "mottled" or "measly." In one it was observed on the second day of the disease, while in the other two it did not appear until the sixth and eighth days respectively, being evidently of the nature of a post-influenzal rash appearing late in the disease. In the twenty-six terminal cases a few pink typhoid-like spots were noted on the chest and abdomen, in one case and "mottled" rashes on the arms and body, in two others on the third day of the disease. Rashes, then, formed a very exceptional and variable feature and corresponded in their characters with those occasionally occurring in influenza, while they differed markedly in their incidence from that of dengue fever.

Coryza.—Running from the nose and eyes was only very exceptionally met with in this outbreak, so much so indeed that laterly when on the look-out for a case presenting these symptoms for the purpose of trying to isolate the influenza bacillus, I have failed to find one, so that in this respect the disease differs from a typical outbreak of influenza.

Lung Affections.—Here again involvement of the lungs has been only very exceptionally noted, signs of bronchitis having only been detected in three cases, and in none of them has definite pneumonic symptoms ensued; another point in which this epidemic differs from the common type of influenza. This may possibly be due to the occurrence of the disease during the hot season of the year.

Spleen and Liver.—In only one case was the liver enlarged to one inch below the ribs, while in only three could the spleen be just felt below the ribs on deep respiration; so that distinct enlargement of the spleen is a point in favour of malarial fever as against influenza.

Pulse.—Another very frequently observed point was the slowness of the pulse during even high fever, when it usually ranged from 70 to 83 per minute even with a temperature of 103 or 104, while it scarcely ever reached 100. After the final decline of the fever a pulse of 60 or even less was commonly seen. In this respect the disease again simulated typhoid.

The Temperature Curve.—Having described the principal symptoms of the disease we next come to the course it runs, which is best illustrated by the temperature curve, which presents most characteristic features in the typhoid-like group coming under observation during the first day or two of the disease. This is well shown in chart I from a patient who was attacked while in hospital, so that the sudden initial rise to 103 is included. On the second day the temperature declined one degree from 102 to 101, but then pursued a very continued curve for the next three days, exactly simulating that of a somewhat mild case of typhoid fever, and the patient presented a flushed face, a tremulous furred tongue, severe headache and a few suspicious-looking pink spots on the anterior abdominal wall. His blood was therefore sent for a serum test for typhoid, but a negative result was obtained, which, however, at such an early date would not necessarily exclude the presence of the disease. On the evening of the sixth day the characteristic terminal rise of temperature commenced, reaching 104 the next morning, and then fell gradually to normal about twenty-four hours later. It is the high initial and final rise with a lower level during the intermediate days that gives the typical "saddle-back" character to the temperature curve. Chart II shows a similar curve in a milder case, the intermediate decline being more marked and the temperature falling gradually to 99 the day before the final rise to 103. Chart III again illustrates a still more marked and lengthy remission, the temperature remaining at between 99 and 100 throughout the fourth and fifth days, yet rising again to 103. On seeing this chart on the afternoon of the fifth day I observed that there would be a high rise before the fever ceased, and on being asked to note what I thought would be its course I marked the dotted line shown in the chart, and it will be seen that it closely corresponds with the actual course except that the rise took place one day later than I anticipated: so characteristic is the final rise in this fever. During the remission, especially if it is marked, headache and pains become somewhat less, and the patient feels better, so that it is easy to understand how such a large proportion as half the cases, believing the fever to be subsiding, remained at home, but when the temperature rose once more often to a higher level even than at the onset, they came to hospital only for their fever to cease on the following day.

Terminal Cases.—It is these cases which form the group which I have referred to as "terminal" and which are so easily mistaken for malarial fever. Chart IV illustrates one of these cases coming to hospital early in the final rise of temperature, while Chart V shows another coming just after the final rise had begun, and simulating very closely the flattopped curve of a malignant tertian malarial paroxism, after the first rapid rise, a resemblance which is further enhanced by the history of sudden onset with rigor and borne out by the steady fall of the temperature during the

twenty-four hours after admission under quinine treatment. In other cases the patients only came in just as the final decline was taking place, and these again simulate the termination of a malarial fever. Benign tertian malarial fevers are more easily distinguished from terminal influenza than are the malignant tertian type, for in the former the decline of the temperature curve is much more rapid as a rule than in influenza or malignant tertian cases, occupying only four to eight hours instead of sixteen to twenty-four or more.

Duration of the Fever.—Almost as characteristic as the temperature curve is the uniformity of the duration of the disease. Thus out of thirty-seven cases admitted during the earlier stages in no less than twenty-nine the fever lasted either six or seven days, and in three more it was five days, while one case terminated on each of the fourth, eighth and twelfth days respectively. Similarly among the terminal cases twenty-two out of thirty-eight ran a course of six or seven days from the onset, although only in hospital for the last day or two of the fever, three lasted eight days, while four, two and three cases terminated on the third fourth and fifth days respectively, and four later than the eighth day, showing that this class was on the average of a milder nature than the typhoid-like group and consequently were more liable to only come to hospital during the final terminal rise of temperature.

Duration of Stay in Hospital.—Two-thirds of the cases admitted in the early stage of the fever remained in hospital between one and two weeks, while the same proportion of the terminal ones were discharged within a week of admission. Considerable weakness and lassitude follows the attack, but convalesence is fairly rapid after the fever ceases, and it is quite rare for a recurrence to take place within a short time.

The Blood Changes.—The examination of the blood for malarial parasites is of primary importance, for although the temperature curve in cases admitted early in the disease very soon serves to exclude malarial fever, yet in the terminal cases it affords no such help. As the great majority of the patients were sailors, who had not taken quinine before admission at any rate in large doses, the absence of the malarial parasites in the blood of every case was of great value in excluding malaria as early as possible, thus allowing smaller doses of quinine to be given than are necessary in the latter disease; much to the comfort of the patient. I also made differential leucocyte counts in upwards of seventy cases in the hope of getting help in the diagnosis, but the results have been very disappointing as most variable counts were obtained; a large mononuclear increase, quite as marked as in many cases of malaria, being met with on the one hand, and a lymphocyte increase, without any large mononuclear excess as in typical cases of typhoid fever, frequently occurring on the other, so that an elaborate analysis of the figures will not serve any useful purpose here, but will be reserved until I have been able to work out the results of leucocyte counts in the whole of the fever cases examined during the last year. One feature of interest, however, deserves mention, namely, the very marked reduction of the total number of leucocytes during the fever, which was quite evident in many of the cases during the leucocyte counts in stained films, and was confirmed by hæmocytometer counts in a few, which showed that the total leucocytes may fall to from 3,000 to 4,000 per cm., or sometimes even below the former figure, but that they rapidly increase again after the fever subsides. As a similar reduction also occurs in the later stages of typhoid and malarial fevers this again is of no help in the diagnosis, but as the course of the fever and the history of its onset in cases seen early is so typical when a few cases have been watched, no help, other than the Widal test in the more severe cases, and an examination for malarial parasites in the milder terminal class, is likely to be required. A reduction of the leucocyte is a well-known feature of uncomplicated influenza.

Differentiation from Dengue Fever.—It will be seen from the above description that the present outbreak presents several points of resemblance to dengue fever; namely, in the frequent severity of the pains in the back, limbs and joints, and in the peculiar remission in the fever curve in many of the cases. The pains, however, do not seen to have been on the whole as sufficiently constant and severe as in "Break-bone fever," as dengue is sometimes called, nor did they return with the final rise of fever and continue during convalescence in the characteristic manner of the latter affection. Again, in dengue the remission of fever is said to set in abruptly and to be complete, the temperature remaining normal for two to four days, while in the present outbreak only a slight saddle-back remission occurred in the severer cases, and in those where it was more marked the temperature always fell gradually through two to four days, and only rarely quite reached the normal, or if it did, it was only for a very short time. Further, the final rise of temperature is said to be often slight or even absent altogether in dengue, which was very rarely the case with the fever described above. Once more the terminal rubeoloid rash on the hands and arms is one of the most constant and characteristic features of dengue, being often followed by peeling while an erythematous rash is also frequently seen in the early stages of the fever; yet we have noted that rashes were very exceptionally present, and variable in their characteristic appearances and position in this Calcutta fever. Again, no swelling and redness of the joints was noticed in any of the cases, although said to

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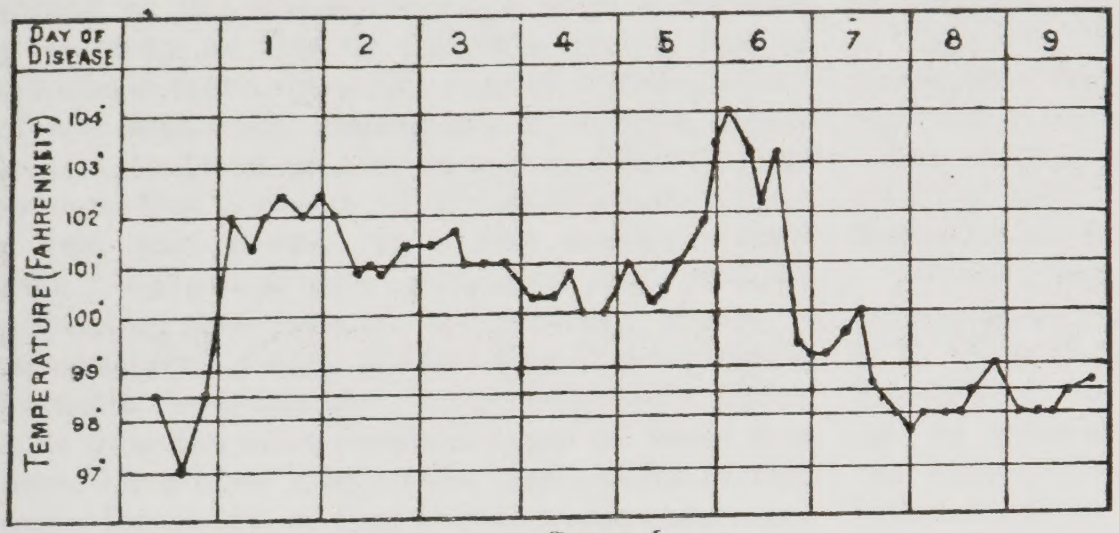


Chart I.

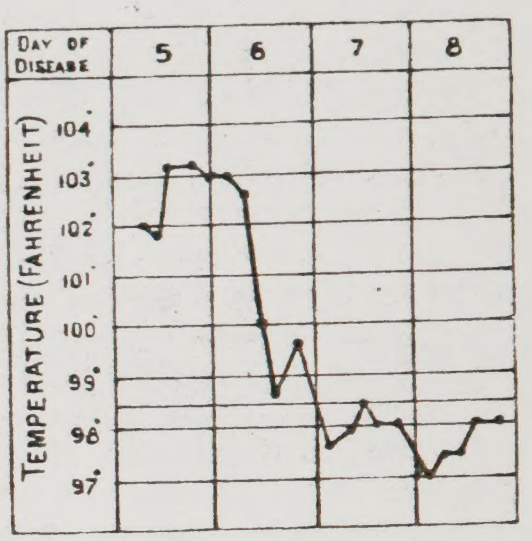


Chart IV.

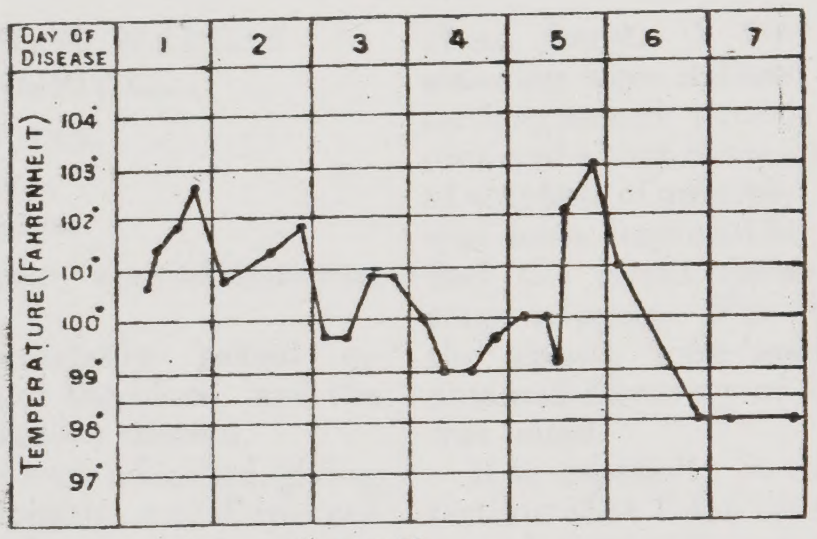


Chart II.

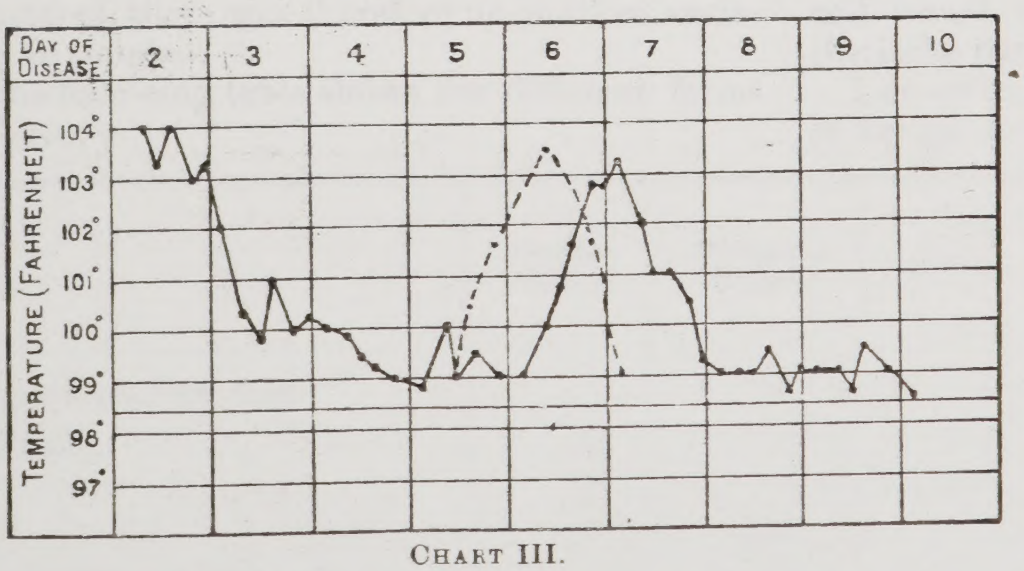


Chart III.

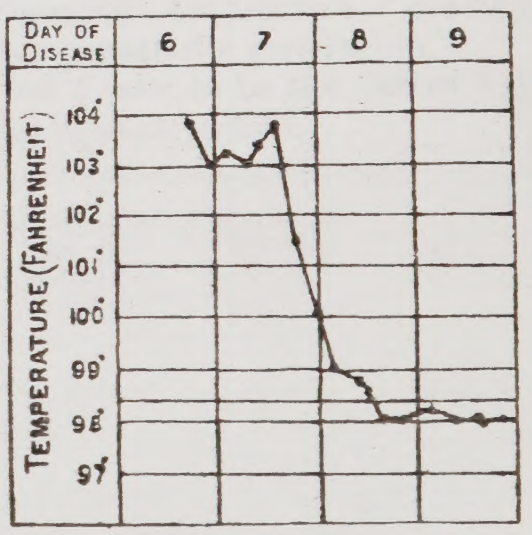
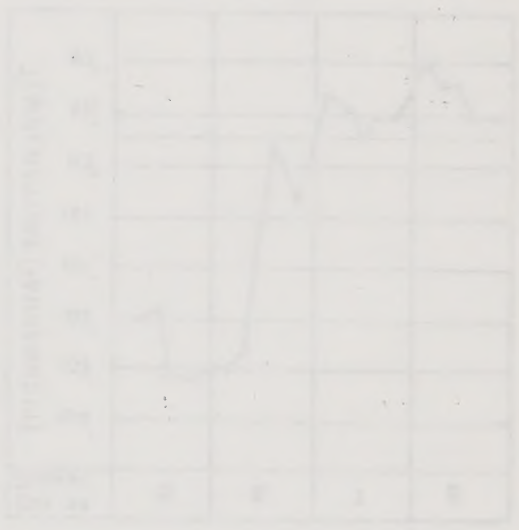


Chart V.



occur in dengue, but it appears that this feature was also absent from the Amoy outbreak described by Sir Patrick Manson,—so too much stress must not be laid on this point. The pulse is also said to be very rapid in dengue, while it was markedly slow for the temperature in this series, and the hæmorrhages and epistaxis of dengue were also absent except for the latter symptom having been once noted in the General Hospital cases. Lastly, the comparatively slow spread of the disease through such a crowded community as that of Calcutta during several months is much more like that of influenza than of the text-book description of dengue, which is said to burst on a town and to affect at least seventy-five per cent. of the inhabitants within a very few weeks. It is also worthy of note that I have met with occasional cases of fever presenting the peculiar temperature charts of this outbreak during the last four or five years in Calcutta hospitals, and, recognising their difference from the more common types of fever seen here, have been long on the look-out for further cases for study, so that this sporadic occurrence is also in favour of influenza as against dengue, which dies out nearly as rapidly as it appears.

Thus we find many of the most constant symptoms of dengue fever either absent or rarely seen, while the severer cases with only slight remission of a continued type of fever very closely correspond in all particulars with Goodheart's description of the typhoid-like group of influenza cases in Clifford Allbutt's *System of Medicine;* and although in the absence of bacteriological confirmation it is impossible to definitely decide in favour of this outbreak being one of influenza, still I think the cases taken as a whole correspond more closely with influenza than with any other known affection, although the possibility of it being a distinct disease must be admitted.

In conclusion it is my pleasing duty to acknowledge the very great kindness of Captains R. P. Wilson and J. G. P. Murray., I.M.S., Resident Surgeons of the General Hospital, in permitting me to examine their cases and to make use of the notes and charts, and also for much valuable information on various points.

MEDICAL CASES FROM MADRAS GENERAL HOSPITAL.

By C. DONOVAN,
MAJOR, I.M.S.,
Second Physician.

1. MALARIA.—As last year, special attention was paid to this fever.

The diagnosis was invariably passed on microscopical examination of the blood and the find of the malarial hæmatozoon therein.

During the year 71 cases were admitted, giving a percentage of 5·57 (Europeans and Eurasians 5·08 per cent., natives 5·75 per cent.). In the previous year 83 cases, a percentage of 6·3 were registered, there was therefore no marked variation in number.

The following table shows the different forms of fever:—

	Benign tertian.	Malignant tertian.	Quartan.	Mixed quartan and malignant tertian.	Mixed quartan and benign tertian.	Total.
Europeans and Eurasians ...	6	11	1	....	....	18
Natives	22	23	6	1	1	53
Total ..	28	34	7	1	1	71

Most of the cases came from Black Town, the majority being of the malignant tertian type. Quartan is apparently making its way gradually into the north of Black Town from Ennore and Tiruvottiyur, as some of the patients affected with this species of plasmodium hied from this locality; their history was clear and admitted of no doubt. A few cases of malaria of long standing were induced to remain in the wards for lengthened periods and in these, relapses occurred about three weeks after a 30-grain dose of sulphate of quinine. As reinfection in hospital was most improbable, attempts were made to find the latent forms of malaria giving rise to these relapses. For this purpose punctures of the spleen were made and in the blood so obtained discovery of forms hitherto undescribed was noted.

It is especially in the benign and malignant tertians that I can speak with any certainty of these latent or dormant forms of malaria.

They arise, it is presumed, parthenogenetically and would correspond to Grassi's "die hypothetische parthenogenetische generation."

I describe, what I take to be the latent forms of benign and malignant tertian.

Malignant Tertian.—In blood drawn from the spleen during life and stained by the ordinary Romanowsky method, spherical forms about 5μ in diameter are found in small numbers, the protoplasm is finely reticular in nature of a very faint sky blue; contained within this is a compact or very loose thread-like chromatin mass

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